National Institute of Environmental Health Sciences

Climate change and the emergence of Vibrio vulnificus disease in Israel

Author(s): Paz S, Bisharat N, Paz E, Kidar O, Cohen D
Year: 2007
Journal: Environmental Research. 103 (3): 390-396

Abstract:

In 1996, a major unexplained outbreak of systemic Vibrio vulnificus infection erupted among Israeli fish market workers. The origins of this emergent infectious disease have not been fully understood. A possible link between climate change and disease emergence is being investigated. Meteorological service data from 1981, the earliest detection and reporting of V. vulnificus for the time in Israel, to 1998 for two stations located within the main inland fish farm industry were analyzed. The 1996-1998 summers were identified as the hottest ever recorded in Israel in the previous 40 years. Time series of monthly minimum, maximum, and mean temperatures showed significant increase in the summer temperatures along the 18 years. The highest minimum temperature value was recorded in summer 1996. Lag correlation analysis revealed significant correlations between temperature values and hospital admission dates. The eruption appeared 25-30 days after the extreme heat conditions in summer 1996, at a lag of 3 weeks in summer 1997 while the results for 1998 were at a lag of less than a week. Higher significant results were detected for the daily minimum temperatures in summer 1996 compatible with the disease eruption. These findings suggest that high water temperature might have impacted the ecology of our study area and caused the emergence of the disease, as an effect of global climate change.

Source: http://dx.doi.org/10.1016/j.envres.2006.07.002

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Food/Water Quality, Temperature

Food/Water Quality: Pathogen

Temperature: Extreme Heat

Geographic Feature:

resource focuses on specific type of geography

Ocean/Coastal

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: Other Asian Country

Other Asian Country: Israel

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease: Vibrioses

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Workers

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content